

COMPACT SYSTEM MODULE WITH BUILT-IN THERMOELECTRIC COOLING

5 This application is a divisional of U.S. Application No. 09/144307
 NOW U.S. PATENT 6,586,835
filed on August 31, 1998, which is incorporated herein by reference.

Field of the Invention

 The present invention relates generally to semiconductor integrated circuits.
10 More particularly, it pertains to a compact system module with built-in thermoelectric cooling.

Background of the Invention

 Integrated circuit technology relies on transistors to formulate vast arrays of
15 functional circuits. The complexity of these circuits requires the use of an ever increasing number of linked transistors. As the number of transistors required increases, the integrated circuitry dimensions shrink. It is one objective in the semiconductor industry to construct transistors and other discrete devices which occupy less surface area on a given silicon chip/die. At the same time, the
20 semiconductor industry seeks to increase the speed and power offered by integrated circuits. One approach to the latter challenge is through the development of improved methods for electrically connecting and packaging circuit devices which are fabricated on the same or on different silicon chips.

 Ideally, we would like to build a computing system by fabricating all the
25 necessary integrated circuits on one wafer or chip, as compared with today's method of fabricating many chips of different functions and packaging them to assemble a system. A true "system on a chip" would greatly improve integrated circuit performance and provide higher bandwidth. Unfortunately, it is very difficult with